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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,681	12/11/2001	Michael Anthony Klug	M-8577-3D US	4374
33031	7590	06/09/2005	EXAMINER	
CAMPBELL STEPHENSON ASCOLESE, LLP 4807 SPICEWOOD SPRINGS RD. BLDG. 4, SUITE 201 AUSTIN, TX 78759			BOUTSIKARIS, LEONIDAS	
			ART UNIT	PAPER NUMBER
			2872	

DATE MAILED: 06/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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<b>Office Action Summary</b>	<b>Application No.</b> 10/014,681	<b>Applicant(s)</b> KLUG ET AL.	
	<b>Examiner</b> Leo Boutsikaris	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 February 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 36-41, 57 and 64 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 36-41, 57 and 64 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Rejections - 35 USC § 103*

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 39-41, 57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara (US 5,949,559) in view of Zabka (US 5,223,955).

Regarding claims 39, 57, Kihara discloses a system and a method for recording holographic stereograms, the system comprising (Figs. 3A, 3B):

a light source 31 for producing a coherent beam L1;

a beam splitter 33 that splits the coherent beam into an object beam L4 and a reference beam L3;

a material holder 50 holding a holographic recording material 30 having elemental holograms;

an object beam unit (Fig. 3B) for displaying a rendered image and for conditioning the object beam with the rendered image to interfere with the reference beam at a chosen elemental hologram;

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a computer programmed to control the interference of the object beam L4 and the reference beam L3 and the delivery of the image to the object beam unit (line 15, col. 3 to line 33, col. 6).

However, Kihara's system lacks a lens located in the path of the object beam, between the condensing lens 43 and the holographic material 30, and proximate to the holographic material, the lens being used to control the size of the elemental hologram being recorded and make the rendered image appear to be further away from the holographic recording material. Zabka discloses a system for recording a sequence of elemental holograms in holographic material 53, wherein an additional lens 47 is placed between the condensing lens 43 and the holographic material 53 (Figs. 1, 7a, 8a, lines 4-12, col. 6). The purpose of the second lens 47 is to change the apparent depth of the field view as well as the size of the hologram (as affecting the focus of the system), see lines 9-12, col. 6, and 60-61, col. 7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second lens between the condensing lens and the holographic material in Kihara's system, as taught by Zabka, for achieving easy focus control, flexibility and enhancement of image fidelity (see lines 4-12, col. 6 in Zabka).

Regarding claims 40-41, the optical system of Kihara also includes an SLM 41 for displaying an image. However, Kihara in view of Zabka does not specify the focal length of the second, voxel control lens located between the condensing lens 43 and the holographic material 30. It would have been obvious to one of ordinary skill in the art to use such a lens with focal length approximately equal to its distance from the SLM or the image of the SLM, since it has been held that discovering an optimum value of a result effective variable involves only routine

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skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Here, the result effective variable is the focal length of the lens. The above arrangement is common in Fourier holography.

Claims 36-38, 64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kihara (US 5,949,559) in view of Kasazumi (US 5,317,435) and Benton (US 4,834,476).

Regarding claims 36-38, and as described above, Kihara discloses all the limitations of said claim, including the limitation that the system comprises a diffuser 42 disposed in the object beam path and a masking plate 44 disposed in the object beam path. However, Kihara does not teach that the diffuser may have a deterministic phase pattern designed to diffuse light in at least one of a specific pattern and a specific direction, or that the masking plate is disposed in the reference beam path.

Kasazumi discloses a holographic recording system wherein a diffuser 200 is disposed in the object beam path (Fig. 3a), the diffuser comprising a deterministic phase pattern (Fig. 3c), and designed to diffuse light in a specific direction (line 55, col. 5 to line 19, col. 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a diffuser of the kind taught by Kasazumi in the system of Kihara, for achieving holographic image recording of high quality with little speckle noise (see lines 21-24, col. 6 in Kasazumi).

Benton discloses a system for recording holographic stereograms, wherein the two recording beams are in a transmission geometry, and an aperture 28 is placed in the path of the reference beam (as well as in the path of the object beam), see Fig. 1. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system of Kihara

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in a transmission geometry, thus placing a masking plate in the path of the reference beam, since the two recording geometries are equivalent structures known in the art (as evidenced by Benton). The choice of the recording geometry depends on the specifics of the desired performance characteristics, such as diffraction efficiency etc.

It is noted that the diffuser and the masking plate act in concert to allow exposure of a particular hogel, and that the diffuser is band-limited since it is designed to act on laser light of a specific wavelength band. Finally, even though Kihara does not explicitly teach that the diffuser and the masking plate are removable and possess positioning adjustment devices, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make said components removable, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179. The ability to move the diffuser and the masking plate allows for a desired diffusion effect as well as for a choice of a hogel of a desired size.

Regarding claim 64, it is noted that the diffuser and the masking plate in Kihara's system are positioned so that they can be replaced by respective second diffuser and masking plate, the latter pair producing one of a larger, smaller or differently shaped elemental hologram.

### ***Double Patenting***

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

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A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 39-41, 57 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,661,548 in view of Zabka (US 5,223,955).

Claim 1 of the '548 patent includes all the limitations of claims 39-41, 57 of the present application except for disclosing a voxel-control lens. As described above, Zabka discloses a system for recording a sequence of elemental holograms in holographic material 53, wherein a lens 47 is placed between a condensing lens 43 and the holographic material 53 (Figs. 1, 7a, 8a, lines 4-12, col. 6). The purpose of the second lens 47 is to change the apparent depth of the field view as well as the size of the hologram (as affecting the focus of the system), see lines 9-12, col. 6, and 60-61, col. 7. It would have been obvious to one of ordinary skill in the art at the time the invention was made to include a second lens between a condensing lens and the holographic material in the system disclosed by the '548 patent, as taught by Zabka, for achieving easy focus control, flexibility and enhancement of image fidelity (see lines 4-12, col. 6 in Zabka).

Claims 36-38, 64 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,661,548 in view of Kasazumi (US 5,317,435) and Benton (US 4,834,476).

Regarding claims 36-38, claim 1 of the present application discloses all the limitations of said claims, except for disclosing a diffuser having a deterministic phase pattern designed to diffuse light in at least one of a specific pattern and a specific direction, and a masking plate disposed in the reference beam path.

Kasazumi discloses a holographic recording system wherein a diffuser 200 is disposed in the object beam path (Fig. 3a), the diffuser comprising a deterministic phase pattern (Fig. 3c), and designed to diffuse light in a specific direction (line 55, col. 5 to line 19, col. 6). It would have been obvious to one of ordinary skill in the art at the time the invention was made to use a diffuser of the kind taught by Kasazumi in the system disclosed by claim 1 of the '548 patent, for achieving holographic image recording of high quality with little speckle noise (see lines 21-24, col. 6 in Kasazumi).

Benton discloses a system for recording holographic stereograms, wherein the two recording beams are in a transmission geometry, and an aperture 28 is placed in the path of the reference beam (as well as in the path of the object beam), see Fig. 1. It would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system disclosed by claim 1 of the '548 patent in a transmission geometry, thus placing a masking plate in the path of the reference beam, since the transmission recording geometry is known in the art (as evidenced by Benton). The choice of the recording geometry depends on the specifics of the desired performance characteristics, such as diffraction efficiency etc.

It is noted that the diffuser and the masking plate act in concert to allow exposure of a particular hogel, and that the diffuser is band-limited since it is designed to act on laser light of a specific wavelength band. Finally, even though claim 1 of the '548 patent does not explicitly



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teach that the diffuser and the masking plate are removable and possess positioning adjustment devices, it would have been obvious to one of ordinary skill in the art at the time the invention was made to make said components removable, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. *Nerwin v. Erlichman*, 168 USPQ 177, 179. the ability to move the diffuser and the masking plate allows for a desired diffusion effect as well as for a choice of a hogel of a desired size.

Regarding claim 64, it is noted that the diffuser and the masking plate in Kasazumi's system and in Benton's system are positioned so that they can be replaced by respective second diffuser and masking plate, the latter pair producing one of a larger, smaller or differently shaped elemental hologram.

#### ***Response to Arguments***

Applicant's arguments with respect to claims 36-41, 57, 64 have been considered but are moot in view of the new ground(s) of rejection.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Leo Boutsikaris whose telephone number is 571-272-2308.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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June 7, 2005



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